disk of the spine is expanded for exerting an expanding force against the disk.

While gutta percha or a gutta percha compound including at least about 15% of the compound by weight is the preferred thermoplastic material, it is understood that other types of thermoplastic material may be suitable if in a non-flowing state at body temperature (37 C.) and in a flowing state when heated over at least about 50 C. for injection from a needle of an injection device. Various other ingredients or elements may be added to the gutta percha compound in various percentages. Further, while specific injection devices have been illustrated for injection of the thermoplastic material, other types of injection devices for heating the thermoplastic material and for applying an axial force against the thermoplastic material for injection may be provided. For example, various devices may be provided for heating the thermoplastic material prior to injection and for pressurizing the thermoplastic material for controlled flow of the thermoplastic material through an injection needle for injection. Thus, while preferred embodiments of the present invention have been illustrated in detail, it is apparent that modifications and adaptations of the preferred embodiments will occur to those skilled in the art. However, it is to be expressly understood that such modifications and adaptations are within the spirit and scope of the present invention as set forth in the following claims.

What is claimed is:

1. A process of replacing nucleus pulposus of an intervertebral disk, comprising:

identifying a location of a rupture in an annulus fibrosus of an intervertebral disk;

removing nucleus pulposus associated with said annulus fibrosus of said intervertebral disk; and

injecting a thermoplastic material heated to a temperature over 50 C. for flowing into said annulus fibrosus and then permitting said material to cool for setting in a non-flowing state upon reaching a temperature of between 35 C. and 42 C., so as to cause said material to occupy a space formerly occupied by said nucleus pulposus.

2. The process as defined in claim **1**, further comprising:

providing an injection device for injecting the thermoplastic material, the injection device having a heating element and a needle for dispensing of the thermoplastic material;

heating the thermoplastic material by said heating element to a predetermined high temperature over 50 C. at which said material flows a desired amount; and

thereafter injecting said thermoplastic material at said predetermined high temperature through said needle for flow into said annulus fibrosus of said selected intervertebral disk.

3. The process as defined in claim **1** wherein injecting a thermoplastic material includes injecting gutta percha heated to a temperature over 50 C. for flowing of said gutta percha into said annulus fibrosus.

4. The process as defined in claim **1** wherein injecting a thermoplastic material includes injecting a gutta percha compound including zinc oxide and heated to a temperature between about 150 C. and 200 C.; and

cooling said gutta percha compound by body temperature to about 37 C. for setting of said gutta percha compound in a non-flowing state with sufficient resilience to provide adequate cushioning.

5. A process of injecting a thermoplastic material within an annulus fibrosus of a selected intervertebral disk of a patient comprising:

selecting said intervertebral disk in which said thermoplastic material is to be injected;

providing an injection device for the thermoplastic material having a heating element for the thermoplastic material and a needle for dispensing of the thermoplastic material;

heating the thermoplastic material by said heating element to a predetermined high temperature at which said material flows a desired amount;

thereafter injecting said thermoplastic material at said predetermined high temperature through said needle for flow into said annulus fibrosus of said selected intervertebral disk; and

cooling said thermoplastic material to the body temperature of the patient for setting of said thermoplastic material in a non-flowing state with a resilience to provide desired cushioning.

6. The process as defined in claim **5**, further comprising:

removing nucleus pulposus from said annulus fibrosus prior to injection of said thermoplastic material wherein said thermoplastic material occupies a space formerly occupied by said nucleus pulposus.

7. The process as defined in claim **5** wherein:

selecting said intervertebral disk includes selecting an intervertebral disk at the apex of a abnormal curvature of the spine of the patient; and

then injecting said thermoplastic material at said predetermined high temperature into the annulus fibrosus of said selected disk.

8. The process as defined in claim **5** wherein:

injecting a thermoplastic material includes injecting gutta percha heated to a temperature over 50 C.

9. The process as defined in claim **5** wherein:

Injecting a thermoplastic material includes injecting gutta percha heated for flowing at a temperature between about 150 C. and 200 C.; and

cooling said gutta percha by body temperature at about 37 C. for setting in a non-flowing state.

10. A process for treating scoliosis of the spine at the greatest deflection of the concavity of the spine formed by the abnormal curvature comprising:

selecting an intervertebral disk at the apex of the concavity:

injecting a thermoplastic material heated to a temperature over 50 C. for flowing into the annulus fibrosus of said intervertebral disk; and

permitting said thermoplastic material to cool to body temperature of a patient for setting in a non-flowing state while retaining sufficient resilience for cushioning and non-migration.

11. The process as defined in claim **10**, further comprising:

providing an injection device for injecting the thermoplastic material, the injection device having a heating element and a needle for dispensing of the thermoplastic material;

heating the thermoplastic material by said heating element to a predetermined high temperature over 50 C. at which said material flows a desired amount; and

thereafter injecting said thermoplastic material at said predetermined high temperature through said needle for flow into said annulus fibrosus of said selected intervertebral disk.

12. The injection device as defined in claim **4**, wherein the thermoplastic material comprises a geometric isomer of natural rubber.

13. The injection device as defined in claim 4, wherein said heater heats said thermoplastic material for flowing at a temperature between about 150C and 200C.

14. The injection device as defined in claim 4, wherein said thermoplastic material comprises a linear crystalline polymer.

15. The injection device as defined in claim 4, wherein said thermoplastic material comprises a gutta percha compound in which gutta percha is between 15% and 40% by weight of the compound.

16. The injection device as defined in claim 4, wherein said injection needle is formed of a ceramic material.

17. The injection device as defined in claim 4, further comprising:

an expandable sleeve about said needle adjacent an extending end of said needle to define an annulus between said needle and said sleeve, so that pressurized fluid communicating with the annulus expands said sleeve outwardly.

18. The injection device as defined in claim 17, wherein said needle has openings thereon for the supply of a pressurized fluid to said annulus for expanding said sleeve.

19. The injection device as defined in claim 4, further comprising:

a piston adjacent an end of said plug for exerting a force against said plug; and

a hand operated trigger is operatively connected to said piston and upon actuation is effective to force said thermoplastic material from said needle when said thermoplastic material is heated to a flowing state.

20. The injection device as defined in claim 4, further comprising;

a hand operated trigger operatively connected to said plug thermoplastic material and upon actuation is effective to force said thermoplastic material from said needle when said thermoplastic material is heated to a flowing state.

21. The injection device as defined in claim 4, further comprising;

the chamber for receiving the plug is provided in a plunger removable from an injection device body.

22. The injection device asa defined in claim 4, further comprising;

a heater control unit having an adjustable temperature control to provide a selected temperature for said heater.

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